South Pacific Ocean.—Of the several cyclonic disturbances reported in the South Pacific Ocean during August, only one of any significance occurred. This was a depression off the coast of Chile that appeared on August 20 and which until the 23d occasioned moderate to whole gales, with accompanying heavy snow and rain squalls. The Danzig S. S. *Gedania*, Capt. L. Schroeder, Buenos Aires to San Pedro, came within its influence on the 20th. Mr. F. Hesse, third officer, reports that the lowest pressure observed was 28.78 inches, occurring at 4 a. m. on the 20th in the Straits of Magellan. The wind at the time of lowest pressure was W. by N., force 7–8. By the 23d the gale had increased to force 8–10 from the southwest.

DETAILS OF THE WEATHER IN THE UNITED STATES

GENERAL CONDITIONS

The feature of the month was the very pronounced excess in precipitation over the upper Mississippi Valley and a much less excess over North Pacific Coast States, northwest Texas, and portions of the New England and Middle Atlantic States. (See inset on Chart IV.) This fact may or may not be significant of a return to normal rainfall in those regions that have experienced a shortage in the last few months.

Temperature was uniformly above normal in the South and in a less degree in some portions of the North. (See Chart III.) The usual details follow.

CYCLONES AND ANTICYCLONES

By W. P. DAY

There were few well-defined cyclonic disturbances charted over the United States during the month, the interchange between polar and equatorial air being evidenced in most cases by a line of discontinuity separating the northerly from the southerly winds in a trough of lower pressure moving eastward across the country. Within these troughs local areas of diminished pressure gave some evidence of cyclonic circulation and their day-to-day movement could be charted; but at all times the great troughs of which these low areas were a part were the important features of the weather charts.

On the other hand, over the adjacent portion of the Atlantic Ocean two tropical cyclones developed and reached hurricane intensity. A detailed description of these two storms is given under the section devoted to storms and weather warnings for the Washington Forecast District and also under the section headed "North Atlantic Ocean."

The high-pressure areas were mostly of the Alberta type, and were, as a rule, quite regular in movement and persistent as individual areas.

FREE-AIR SUMMARY

By V. E. JAKL, Meteorologist

Tables 1 and 2 well represent the upper-air conditions that prevailed at the six aerological stations during the month. As will be noted, the departures from normal were on the whole of almost negligible value. Furthermore, the record shows what is not revealed in the tables, that, with not many important exceptions, the conditions on individual days were practically the same as the averages for the month. This equable condition of the upper air naturally resulted from the lack of cyclonic activity during the month. (See Cyclones and Anticyclones above.)

Considering first the temperature, it is apparent that the lapse rate was of about normal value at all stations; consequently the slight departures in temperature that prevailed on the ground extended vertically with but little change. Therefore Chart III, this REVIEW, showing for the surface slightly cooler weather than normal over northern sections and slightly warmer weather over southern sections, applies as well to the upper air for sections east of the Rocky Mountains.

Relative humidity was quite uniformly normal or close to normal at all elevations at the various stations, which, combined with approximately normal temperatures, gave vapor pressures that were also about normal, as the computed results show in Table 1. However, the departures from normal in relative humidity and vapor pressure, unless of pronounced magnitude, are of little significance, inasmuch as the vapor content of the upper air can change rapidly, while the kite flights, on which the averages are based, are usually made in fair weather.

Winds, as shown by both kite and pilot-balloon observations, were generally about normal in direction and velocity, the usual direction for the greater portion of the country being from south to west. An approximate allocation of the normal winds for the month would be about southwest for the middle valley region and about west for the eastern portion of the country, with a general tendency toward veering somewhat with altitude. An important exception, however, in the prevalent winds for the month is noted at Due West, where there was a decided northerly tendency at moderate and high elevations, in marked contrast to normal westerly winds. This deviation from the normal direction at Due West may be attributed to the unusual pressure distribution prevalent over the southeastern portion of the country, where the normal August condition of high pressure extending from the Atlantic and diminishing westward was conspicuously absent during the greater portion of the month. (See Storms and Weather Warnings, New Orleans Forecast District, p. 411–412.) At Key West and San Juan, balloon observations showed resultant winds from an easterly direction at all altitudes, which probably represents the normal wind condition at those stations. Easterly upper winds were observed also at many other stations (except the more northerly ones), particularly in the latter portion of the month. Such occurrences of easterly winds, however, were too infrequent and were associated with too low velocities to show an appreciable easterly component in the monthly resultants for any level.

A number of instances of high velocity observed in two-theodolite pilot-balloon observations are recorded. The value of these observations lies in the undeniable proof they give that such velocities actually occur quite frequently, as the acceptance of such observations is not dependent on confidence in the normal behavior of the balloons. Moreover, such observations prove beyond dispute the existence of high velocities aloft on days when, from the surface barometric gradients, low velocities to great depth might be construed. Outstanding instances of high velocities observed during the month by the two-theodolite method are as follows: On the 4th, Ellendale showed in a two-theodolite observation, a wind increasing from 0.6 meter per second on the ground to 38 meters per second at 9,500 meters altitude; and on the 9th, a wind velocity of 3 meters per second on the ground, increasing to 40 meters per second at 8,000 meters altitude. Broken Arrow, in a two-theodolite observation on the 25th, showed a light wind averaging